NXP®
NTAG 5 link

NTAG® 5 link: NFC Forum Compliant I²C Bridge

Optimized for sensor-driven applications, this highly integrated NFC tag creates a secure, standard-based link from the device to the cloud, for a secure, future-proof way to address and even power sensors.

IoT on demand

Supply, read out, and send sensor data to the cloud, without an MCU

Smart Living

Securely, conveniently install and maintain a smart home network

Industrial

Use a long-range reader to calibrate and parameterize at the end of production

KEY BENEFITS

- Reading distance with long-range reader >60 cm (>25 inches)
- Zero-power readout of an I²C sensor
- Energy-efficient design with reduced bill of material
- Flexible split between three open and/or protected memory areas
- Adjustable security level up to AES mutual authentication
- Interoperable data exchange (NFC Forum compliant)

KEY FEATURES

- NFC Forum compliant Type 5 tag
- ISO/IEC 15693 compliant
- 2048 bytes user memory, 256 bytes SRAM
- Configurable wired interfaces: I²C master and slave, PWM, GPIO, NFC field detection
- Energy harvesting with configurable output up to 30 mW
- Scalable security: 32-/64-bit password protection, 3 configurable user memory areas, ECC-based reprogrammable originality signature, 128-bit-AES mutual authentication
- NFC silence to disable NFC interface

nfc everywhere

NXP

- Low-power consumption: <6 µA standby, <0.25 µA hard power-down
- Wide temp range: -40 to +85 °C

NXP's NTAG 5 link lets designers of sensor-equipped systems add an NFC interface with a wired host interface that's configurable as an I²C master/slave, a pulse width modulator (PWM), or a general-purpose I/O (GPIO). Operating at 13.56 MHz, it is an NFC Forum compliant contactless tag that can be read and written by an NFC-enabled device at close range and by an ISO/IEC 15693-enabled industrial reader over a longer range.

DIRECT SENSOR CONNECTION

The NTAG 5 link can act as a direct bridge between an NFC-enabled device and any I²C slave, such as a sensor or external memory. This is especially useful in environments that require zero-power, single-shot measurements.

CLOUD CONNECTIVITY

With NTAG 5 link, the device can connect to the cloud with a single tap. The connection uses an NFC Forum compliant data exchange mechanism involving SRAM to ensure highly interoperable data transfers.

READ RANGE DUALITY

Support for ISO/IEC 15693 lets the NTAG 5 link communicate securely in two ways—with powerful industrial readers, at a range of up to 60 cm and with NFC-enabled devices (proximity range). This duality makes it possible for the device to be calibrated and parameterized automatically while in the factory and then, when put to use in the field, safely communicate with contactless devices such as smartphones.

INDEPENDENTLY PROTECTED MEMORY AREAS

The tag's 2048 bytes of memory can be divided into three areas, and each area can use a different protection level, varying from no protection to 32-/64-bit, password-protected read/write access or up to 128-bit-AES protected read/write access with mutual authentication. Different parties in the value chain can have their own dedicated memory areas for data storage.

The NTAG 5 link comes with pre-programmed proof-of-origin functionality to verify authenticity. The reprogrammable elliptic curve cryptography (ECC) originality signature can be locked or reprogrammed by the customer.

ENERGY HARVESTING

The NTAG 5 link can operate without a battery, by drawing power from the NFC reader instead. The tag supports energy harvesting, which means it can be used to supply power to other components in the system. When sufficient energy is available, the tag can supply a fixed, configurable voltage level to ensure a stable overall system.

NTAG 5 FAMILY SELECTION GUIDE

			NTAG 5 switch	NTAG 5 link	NTAG 5 boost
Contactless Interface	Pure passive ISO/IEC 15693		yes	yes	yes
	Active load modulation		no	no	yes
Wired Interfaces	PWM		yes	yes	yes
	GPIO		yes	yes	yes
	I²C	Slave	no	yes	yes
		Transparent master	no	yes*	yes
Power	Energy harvesting with regulated V_{OUT}		yes, up to 30 mW	yes, up to 30 mW	only for passive
	Stand-by current typical at RT		<6 µA @ RT	<6 µA @ RT	<10 µA @ RT
	Hard power down current typical at RT		<0.25 µA @ RT	<0.25 µA @ RT	<0.25 µA @ RT
Security	32-/64-bit password		yes	yes	yes
	128-bit AES mutual authentication		no	yes*	yes
	Reprogrammable ECC originality signature		yes	yes	yes

*not available for NTP5312

NTAG 5 LINK ORDERING INFORMATION

Product Type ID	12NC	Package	Packing	MOQ
NTP53121G0JUA* • Bare die on wafer	9353 582 08005	FFC	Wafer	1 Wafer
NTP53321G0JUA	9353 582 09005			
NTP53121G0JT* • 3.6 × 6.2 × 1.35 mm, no energy harv., hard power down	9353 549 05431	SO8	Reel 13"	2500
NTP53321G0JT	9353 549 11431			
NTP53121G0JTT* • 4.4 × 5.0 × 1.1 mm	9353 624 11431	TSSOP16	Reel 13"	2500
NTP53321G0JTT	9353 624 96431			
NTP53121G0JHK* • 1.8 × 2.6 × 0.5 mm	9353 549 03115	XQFN16	Reel 7"	4000
NTP53321G0JHK	9353 549 09471			

*no AES/I²C master functionality

www.nxp.com

Date of release: June 2019
Document Number: NTAG5LINKFS REV 0

nfc everywhere